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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
08/936,510	09/24/1997	YONG BEOM KIM	8733.20056	9825

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EXAMINER

CHOWDHURY, TARIFUR RASHID

ART UNIT	PAPER NUMBER
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2871

DATE MAILED: 06/25/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

08/936,510

Applicant(s)

KIM, YONG BEOM

Examiner

Tarifur R Chowdhury

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 June 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,4,8,9,11,14,16-21,29-31 and 37-39 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,4,8,9,11,14,16-21,29-31 and 37-39 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

2. **Claim 1 is rejected under 35 U.S.C. 102(e) as being anticipated by Mitsui et al., (Mitsui), USPAT 5,559,617.**

3. Mitsui shows in figure 1, a reflective-type liquid crystal display device comprising:

- first and second substrates (2, 3);
- a reflective electrode (7) over the first substrate (2);
- a liquid crystal layer (17) between the first and second substrates (2,3);
- two optical compensation films (13, 14) of a same type over the second substrate (3);
- a first alignment layer (9) over the first substrate (2); and
- a second alignment layer (11) over the second substrate.

Accordingly, claim 1 is anticipated.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and

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the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1, 4, 8, 9, 11, 14, 16-21, 29-31 and 37-39 are rejected under 35

U.S.C. 103(a) as being unpatentable over Clerc et al. (Clerc), USPAT 4,813,770 in view of Sugiyama et al., (Sugiyama), PN 5,757,455 and Toko, PN 5,793,459 and Kanbe et al.(Kanbe), PN 5,500,750.

6. Clerc shows in figure 9, a reflective-type liquid crystal display device comprising:

- first and second substrates (14,6);
- an electrode over the first substrate;
- a liquid crystal layer (4) between the first and second substrates (14,6);
- two uniaxial optical compensation films (54,52) of a same type over the second substrate (6);
- a reflector (40) below the first substrate (14).

In regard to the electrode being reflective, it is known and a common goal in the art to minimize components, thus resulting in a thinner, lighter weight display, which is accomplished by eliminating extra layers. It is known in the art to form a reflecting layer and an electrode as a single layer (a reflecting electrode) to perform the function of both with only one layer. Therefore, it would have been obvious to one having ordinary skill in the art to combine the reflecting layer and the electrode into a single layer (a reflecting electrode) for several advantages such as reducing the thickness and weight of the device.

It is notoriously well known in the liquid crystal art to form alignment layers over the substrate in order to orient liquid crystal molecules.

Further, Clerc discloses in col. 11, lines 8-17 that the use of one or more (emphasis added) sheets of negative optical anisotropy uniaxial material in the cell of Fig. 9 provides better light efficiency. Therefore, it would have at least been obvious to one of ordinary skill in the art to use two uniaxial optical compensation films of a same type o that light efficiency is improved.

Clerc discloses that one uniaxial optical compensation film is negative-type (col. 10, lines 64-65).

Clerc discloses that one uniaxial optical compensation film is positive-type (col. 10, lines 54-55).

Clerc does not explicitly disclose the limitation such as the alignment layer having a plurality of alignment directions over the first substrate. However, Sugiyama discloses a liquid crystal display device having good visual angle characteristics includes a first alignment film with a plurality of first alignment direction, where at least two of the plurality of first alignment directions are either perpendicular or parallel to one another (figure 6G), formed on the first substrates and a second alignment film with an alignment direction perpendicular to the first alignment direction formed on the second substrate (col. 1, lines 63-64; col. 2, lines 5-13).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to employ a first alignment layer having a plurality of first alignment directions over the first substrate in the device of Clerc in order to obtain a display with good visual angle characteristics.

Sugiyama also discloses a method of manufacturing such device including a method of forming the alignment layer including rubbing or exposing number of times in accordance with the number of the alignment directions to polarize ultraviolet rays to form the alignment directions (column 4, lines 28-49, column 5, lines 26-28).

The limitations still lacking are that of exposing the alignment layer to non polarized ultraviolet light to form the alignment directions and the reflective electrode having a surface with convex portions.

Toko disclose a method of manufacturing a liquid crystal display device including rubbing or exposing to polarized light or non-polarized light to form the alignment direction (column 4, lines 13-21).

Therefore, It would have been obvious to one of ordinary skill in the art at the time of the invention to expose the alignment layer to polarized or non-polarized light to form the alignment direction of the alignment layer of the display device disclosed by Sugiyama et al., since both exposing to the polarized and non-polarized light cause the same effect, forming the alignment direction as described by Toko.

Kanbe discloses a reflective electrode having a surface with convex portions (column 9, lines 20-65) to improve the reflective characteristics (column 2, line 41) and improve the display quality (column 3, line 23). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use a reflective electrode having an opaque metal and a surface with convex portions in order to improve display quality.

Response to Amendment

7. It is acknowledged and appreciated that applicant has overcome the drawing objection by deleting references to convex portion in claim 14.

Response to Arguments

8. Applicant's arguments filed on April 17, 2002 have been fully considered but they are not persuasive.

In response to applicant's argument that Mitsui (USPAT 5,559,617) and Clerc (USPAT 4,813,770) do not teach or suggest two uniaxial optical compensation plate of a same type over the second substrate, it is respectfully pointed out to applicant that Mitsui discloses in col. 10, lines 58-63 and col. 12, lines 14-23 that the two optical compensation plates (13, 14) have same retardations and are made of a same material and thus are of a same type. Further, it is also respectfully pointed out to applicant that Clerc discloses in col. 11, lines 8-17 that the use of one or more (emphasis added) sheets of negative optical anisotropy uniaxial material in the cell of Fig. 9 provides better light efficiency. Therefore, it would have been obvious to one of ordinary skill in the art to use two uniaxial optical compensation films of a same type o that light efficiency is improved.

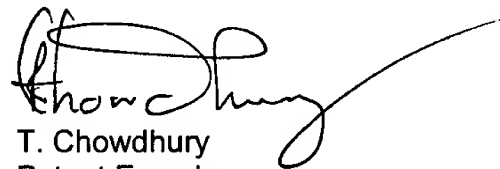
Conclusion

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tarifur R Chowdhury whose telephone number is (703) 308-4115. The examiner can normally be reached on M-Th (6:30-5:00) Friday Off.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, William L Sikes can be reached on (703) 305-4842. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7724 for regular communications and (703) 308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1782.

A handwritten signature in black ink, appearing to read 'T. Chowdhury', with a long, sweeping horizontal line extending to the right.

T. Chowdhury
Patent Examiner
Technology Center 2800

TRC
June 24, 2002